

CLAIM AMENDMENTS

1. (Presently Amended) In an existing optical network comprising a multiplicity of destination terminals, an intermediate terminal, and a primary terminal, each of said multiplicity of destination terminals including an optical interface unit (OIU) having an OIU input optical connector and an OIU output optical connector and each OIU for extracting data on lightwaves received at said OIU input optical connector and injecting data onto lightwaves transmitted from said OIU output optical connector, each of said destination terminals having a corresponding pair of optical fibers extending to said intermediate terminal, each of said corresponding pairs of optical fibers including a first fiber and a second fiber, and each of said OIU connected by said OIU input optical connector and said OIU output optical connector to each corresponding first fiber and second fiber, and a like multiplicity of pairs of optical fibers extending one pair each between one of said destination terminals and an intermediate terminal, each of said pair including a first fiber and a second fiber, selected ones of said destination terminals including an OIU (optical interface unit), each OIU having an input optical connector and an output optical connector and each OIU for extracting data on lightwaves received at said input optical connector and injecting data onto lightwaves transmitted from said output optical connector, each of said OIUs connected by said input and output optical connector to each fiber of a corresponding one of said multiplicity of pairs of optical fibers, and said intermediate terminal connected to [[a]] said primary terminal by at least a primary pair of optical fibers, apparatus for providing optical data transmission comprising:

a first conversion circuit located in said intermediate terminal having [[an]] a first conversion input optical connector and [[an]] a first conversion output optical connector, said first conversion circuit for converting optical data to electrical data and electrical

data to optical data, said first conversion ~~circuitry~~ circuit further including electrical connections;

a transmission loop comprising ~~a plurality of said selected~~ said multiplicity of destination terminals and ~~a like plurality of said~~ corresponding pairs of optical fibers wherein: connecting said plurality of destination terminals to said intermediate terminal, ~~said first fiber of each of said plurality of pairs terminating with a first optical connector at said intermediate terminal, and said second fibers of each of said plurality of pairs terminating with a second optical connector at said intermediate terminal;~~

at each ~~one of said selected~~ of said multiplicity of destination terminals, said first fiber of said corresponding pair of optical fibers connected to said OIU output optical connector ~~of said OIU (optical interface unit), and said second fiber of said corresponding pair of optical fibers connected to said OIU input optical connector of said OIU; and~~

at said intermediate terminal each said first optical fibers of said corresponding pairs of optical fibers ~~connector of each one of said first fibers of~~ said plurality of pairs connected to said second fibers ~~said second optical connector of said second fiber of another~~ of other of said corresponding pairs of optical fibers, ~~one of said plurality of pairs, except said first optical fiber~~ ~~connector on a first fiber of one of said corresponding pairs of optical fibers a first~~ pair is connected to said first conversion input optical connector ~~of said conversion circuit~~ and said second optical fiber ~~connector on a second fiber of a~~ last pair of another one of said corresponding pairs of optical fibers is connected to said first conversion output optical connector ~~of said conversion circuitry; and~~

a second conversion circuit located in said intermediate terminal for converting optical data to electrical data and electrical data to optical data and electrically connected to said electrical connections of said first conversion ~~circuit~~ circuit, said second conversion ~~circuit~~ circuit also optically connected to said primary pair of optical fibers extending between said intermediate terminal and said primary terminal.

2. (Cancelled).

3. (Cancelled).

4. (Presently Amended) In an existing optical network comprising a multiplicity of destination terminals, each of said destination terminal having a corresponding pair of optical fibers, each corresponding pair of optical fibers and a like multiplicity of pairs of optical fibers, each pair having a first fiber and a second fiber, and each one of said destination terminals connected to an intermediate terminal by one of said multiplicity of pairs its corresponding pair of optical fibers, and said intermediate terminal connected to a primary terminal by at least a pair of primary optical fibers, apparatus for providing upgraded optical data transmission comprising:

a first conversion circuit located in said intermediate terminal having ~~[[an]]~~ a first conversion output optical connector and ~~[[an]]~~ a first conversion input optical connector for connecting said optical fibers to optically transmit and receive bidirectional data between said intermediate terminal and ~~selected ones of~~ said multiplicity of destination terminals, said first conversion circuit for converting optical data to electrical data and electrical data to optical data, said first optical conversion circuit further including electrical connections;

a first optical interface unit (OIU) and a last OIU, ~~(optical interface unit)~~ said first and last OIUs located in a first destination terminal and a last destination terminal,

respectively, said first and last destination terminals included in said multiplicity of destination terminals, respectively; each of said first and last OIUs; including an input optical connector and an output optical connector, said first and last OIUs for extracting and inserting data on lightwaves traveling over ~~a pair of said multiplicity of pairs of said~~ optical fibers, and said lightwaves being received at said input optical connectors and transmitted from said output optical connectors of said first and last OIUs, wherein;

said first fiber of said corresponding pair of optical fibers of said first destination terminal is a first pair of said multiplicity of pairs of optical fibers extending between said intermediate terminal and said first destination terminal and having said first fiber of said first pair connected to said first conversion output optical connector of said first conversion circuit; and said second fiber of said corresponding pair of optical fibers of said last destination terminal a last pair of said multiplicity of pairs of optical fibers extending between said intermediate terminal and a last distribution terminal and having said second fiber of said last pair connected to said first conversion input optical connector of said first conversion circuit, the second fiber of said first pair corresponding pair of optical fibers of said first destination terminal and the first fiber of said last pair corresponding pair of optical fibers of said last destination terminal connected so as to form a series optical loop extending between said first conversion output optical connector of said first conversion circuit and at least through said first and last distribution destination terminals and back to said first conversion input optical connector of said first conversion circuit; and

a second conversion ~~circuit~~ circuit located in said intermediate terminal for converting optical data to electrical data and electrical data to optical data, and

electrically connected to said first conversion ~~circuit~~ circuit, said second conversion ~~circuit~~ circuit also optically connected to said pair of primary optical fibers extending between said intermediate terminal and said primary terminal.

5. (Presently Amended) The apparatus of claim 4 wherein said second fiber of said corresponding pair of optical fibers of said first destination terminal ~~first pair~~ and said first fiber of said ~~last pair~~ corresponding pair of optical fibers of said last destination terminal are connected directly to each other.

6 - 9. (Cancelled).

10. (Original) The apparatus of claim 4 wherein said optical interface unit is a broadband optical interface unit.

11 - 34. (Cancelled).

35. (New) An apparatus for facilitating optical communication between a first terminal and a first remote optical interface unit (OIU) and a second remote OIU, each remote OIU having an OIU optical input and an OIU optical output, the first and second remote OIUs associated with a first pair and a second pair of optical fibers, respectively, each pair of optical fibers comprising a first fiber and a second fiber, the apparatus comprising:

an optical communication unit located within the first terminal and having an optical communication unit input and an optical communication output, wherein:

the OIU optical input of first remote OIU is connected to the optical communication output of the optical communication unit by the first fiber of the first pair of optical fibers;

the OIU optical output of the second remote OIU is connected to the optical communication input of the optical communication unit by the second fiber of the second pair of optical fibers;

the OIU optical output of first remote OIU is connected to the second fiber of the first pair of optical fibers;

the OIU optical input of second remote OIU is connected to the first fiber of the second pair of optical fibers; and

the second fiber of the first pair of optical fibers and the first fiber of the second pair of optical fibers define an optical communication loop separate from the optical communication unit;

wherein the optical communication loop is defined by the second fiber of the first pair of optical fibers and the first fiber of the second pair of optical fibers by directly connecting the second fiber of the first pair of optical fibers to the first fiber of the second pair of optical fibers.

36. (New) The apparatus of claim 35, wherein the optical communication loop is defined by the second fiber of the first pair of optical fibers and the first fiber of the second pair of optical fibers by intermediate OIUs each having an OIU optical input and an OIU optical output and each intermediate OIU having a corresponding pair of optical fibers comprising a first fiber and a second fiber.

37. (New) The apparatus of claim 35, wherein the first and second OIUs are broadband OIUs.

38. (New) The apparatus of claim 35, further comprising at least one optical bypass switch associated with one of the first or second remote OIUs and connected across the corresponding first or second pair of optical fibers.